Section C. Maneuvering Near Other Objects

Overview

Introduction

This section applies basic maneuvering principles to control your vessel with respect to other objects. Later parts will cover mooring, unmooring, and coming alongside other vessels or objects. This covers maneuvering your vessel near, but not next to, another object.

In this section

This section contains the following information:

Keeping Station

C.1. General

Learn to manage the effects of environmental forces by keeping station on an object. Keeping station maintains your distance, position and aspect to or from an object. With twin propulsion, develop skills to keep station at any aspect to any object in most conditions. Though many single-drive boats are thought to be less maneuverable, fully develop single-drive station-keeping skills. Practice station-keeping in various levels of wind, seas and current.

This section includes considerations for a maneuvering zone, maneuvering on different types of objects and different maneuvers to keep station.

NOTE

All coxswains of twin-drive vessels must frequently train for single drive operation. This includes station-keeping.

C.2. Determine a maneuvering zone

Each situation requires a safe maneuvering zone to reach an optimal position near the object so an evolution can safely occur and be done effectively, i.e., equipment transfer, object recovery, surveillance, etc.

Before you keep station, get the "big picture."

CAUTION !

When station-keeping, always have a safe escape route to get clear of the object or any hazard. As you keep station, ensure the escape route stays clear. This may require changing position to establish a new escape route.

Step	Procedure
1	Evaluate environmental conditions and how they affect the situation.
2	Determine if obstructions on the object or in and above the water limit your safe maneuvering zone.
3	Account for them and keep the environmental forces in mind
4	Avoid vessel outriggers or hull protrusions, loose pier camels or broken pilings, ice guards, shoals, rocks or other submerged obstructions, low overhead cables or bridge spans.
5	Define the maneuvering zone by distance, position and aspect. Put limits on each element and maneuver to stay within those limits.

C.2.a. Distance

Keep station close enough to complete a mission or evolution, yet far enough to prevent collision or allision. Minimum distance to the object will probably vary around the object or along its length. Environmental conditions and boat maneuverability play a major role in determining distance.

1. Use a practiced eye and ranging techniques to keep distance.
2. When able, use identifiable keys, such as a boat length. Unless well practiced, each crewmember will probably differ in how they view 25 feet or 25 yards.
3. Use knowledge of your own vessel. If it has a twelve-foot beam at the transom, transpose that measurement to the gap between your boat and an object.
4. If the coxswain station does not allow a clear view of the object, use points on your vessel (windscreen brackets, antennae, or fittings) to set up range-keeping clues.
5. Position: the angle from the object to your vessel (or the reciprocal). To keep station on another vessel, particularly one that is disabled and adrift, use the angle your vessel is from the other vessel's centerline; on a moored or fixed object, use a geographic or compass bearing.
6. Aspect: the relative angle your vessel makes to the other object (bow, beam, quarter, etc.). You may need to keep the object at a certain aspect to pass equipment or a towline, to maintain surveillance or to train a fire hose.

C.3. Differences in objects

Differences in objects determine the maneuvering situation. Become fully capable of station keeping in a variety of situations both type of object and environmental conditions.

C.3.a. Keep station on a free-drifting object

Object type and size ranges from small items to other vessels. Free-drifting objects will present a different drift rate from your vessel. Develop station-keeping techniques by first matching your drift rate to the object, then overcoming the difference.

Have another vessel maintain a steady course at low speed. Pace your vessel to the other vessel and then maneuver around it. Pacing your movement to the other vessel is critical before safely going alongside.

No Leeway	Practice with a floating (but ballasted) item that does not drift with the wind. A weighted mannequin with PFD or weighted duffel bag with a float in one end will work. The object's drift will be limited to the surface current, while your vessel will respond to currents and winds. This type of object simulates a person-in-the-water.
Leeway	Wind-drift is the main consideration here. Practice with paired fenders, a partially filled 6-gallon bucket or a small skiff. Though wind will have a measurable effect on object drift, current will play little role. As above, your vessel will be subject to both wind and current.
Other Vessel	Become proficient at station-keeping on a variety of vessel types including one like your own. Different vessels react differently to environmental forces. Learn how other vessels drift compared to your own. See how other vessels lie to the wind, then maneuver your vessel to an optimal position for observation, coming alongside or passing a tow rig.

C.3.b. Keep station on an anchored object

This limits much of the object's movement due to wind and current, but the object will often surge and swing. Your vessel will react freely to the wind and current. The object will ride with its moored end into the strongest environmental force affecting it, while the combination of forces on your vessel may cause it to take a different aspect.

Station keeping on an anchored object helps you learn where you can or cannot maneuver. Upstream of a buoy, strong current could easily carry you down on it. On the other hand, the only safe approach to a disabled vessel, anchored off a lee shore, may be from dead-to-weather.

Buoy or Float	In general, approach a moored buoy or float from down-current or downwind, bow to the object. If servicing a floating aid to navigation, the approach may require centering your stern on the buoy. To train, keep station at various distances and angles to an object. Pick something totally surrounded by safe water. Next, maneuver up-current or upwind.
A Vessel	Surveillance, personnel or equipment transfer, or fire fighting may require station-keeping on an anchored vessel. Develop skills to keep station at all distances and angles. Different sizes and types of vessels will ride their anchors differently. Deep draft or a large underbody will make a vessel ride with the current, while high freeboard and superstructure may make the vessel tend downwind. Evaluate the combination of forces as you keep station. Note vessel interaction. If you are close aboard and upwind, a small, light vessel may ride the anchor differently than if you weren't there. A larger vessel may affect the forces on you by making a lee. Watch a vessel's motions while it "rides" anchor. Some vessels don't "steady out," but veer back and forth. Observe and plan accordingly.
Fixed Object	Keep station on a pier, seawall, or breakwater. View this as a step before mooring. Also, you may need these skills to transfer someone to a fixed aid to navigation or to remove a person stranded on rocks. Station keeping on fixed objects makes you deal with forces that affect you and not the object. Often, the fixed object affects the environmental forces by funneling, blocking, or changing direction of the current or wind.

Maneuvering

C.4. General

Station-keeping will usually require frequent to near-continuous applications of power and helm to stay in the safe maneuvering zone. As you keep station and try to stay within the maneuvering zone limits, you will find that adjusting for one of the parameters (distance, position, aspect), will almost always involve a change to one or both of the other two. While using power and helm to compensate for and to overcome wind and current, use the wind and current to your best advantage.

C.5. Stem the forces

To stem the forces means to keep the current or wind directly on the bow or stern and hold position by setting boat speed to equally oppose the speed of drift.

C.6. Crab the boat sideways

To do this, use the environmental forces to move the boat at a right angle to the forces. Put the bow at a shallow angle (20 to 30 degrees) to the prevailing force and use ahead propulsion and helm to keep from getting set backward, while staying at the shallow angle to the prevailing environmental force.

C.7. Open and close

Make your vessel “open” and “close” the distance on the object at various angles, both to leeward and to weather. With an object on the bow or stern, directly up-drift or down-drift from you, opening and closing requires only to compensate for the fore and aft drift rate and to maintain a steady heading. The more difficult scenario is opening or closing distance abeam.

Step	Procedure
1	Use a combination of control and environmental forces: side force, ahead and astern thrust, rudder force, leeway, current drift.
2	Remember to account for pivot point when moving the bow or the stern.
3	Use reasonable limits and stay within them.